

AMENDMENTS TO THE CLAIMS

1-39. (Cancelled)

40. (Currently Amended) ~~The system of claim 39, further comprising:~~ A system for processing a stereo input signal which includes center information, matrix encoded surround information, and stereo information, the system comprising:

first circuit for providing a center output having center monaural information, which includes a first summer which combines one channel of the stereo input signal with the other channel of the stereo input signal to form a center combined signal which has the surround information removed;

second circuit for providing a surround output from the matrix encoded surround information having surround monaural information, which includes a second summer which combines one channel of the stereo input signal with an inverse of the other channel of the stereo input signal to form a surround combined signal which has the center information removed;

third circuit for providing an expanded stereo output, which includes a first Q-filter which adjusts an amplitude and phase of the surround combined signal on a frequency dependent basis to form a first filtered signal;

a third summer which combines the center combined signal with one channel of the stereo input signal to form a first signal;

a fourth summer which combines the center combined signal with the other channel of the stereo input signal to form a second signal;

a fifth summer which combines an inverse of the surround combined signal with the first signal to form the third signal;

a sixth summer which combines the surround combined signal with the second signal to form a fourth signal;

a seventh summer which combines the first filtered signal with the third signal to form the first output signal; and

an eighth summer which combines an inverse of the first filtered signal with the fourth signal to form the second output signal.

41-45. (Cancelled)

46. (New) The system of claim 40 further comprising:
first and second speakers for outputting said first and second output signals.

47. (New) The system of claim 40, further comprising:
a multiplier which modifies the center combined signal.

48. (New) A system for processing a stereo input signal which includes center information, matrix encoded surround information, and stereo information, the system comprising:

means for providing a center output having center monaural information, which includes a first summer which combines one channel of the stereo input signal with the other channel of the stereo input signal to form a center combined signal which has the surround information removed;

means for providing a surround output from the matrix encoded surround information having surround monaural information, which includes a second summer which combines one channel of the stereo input signal with an inverse of the other channel of the stereo input signal to form a surround combined signal which has the center information removed;

means for providing an expanded stereo output, which includes a filter which adjusts an amplitude and phase of the surround combined signal on a frequency dependent basis to form a first filtered signal;

a third summer which combines the center combined signal with one channel of the stereo input signal to form a first signal;

a fourth summer which combines the center combined signal with the other channel of the stereo input signal to form a second signal;

a fifth summer which combines an inverse of the surround combined signal with the first signal to form the third signal;

a sixth summer which combines the surround combined signal with the second signal to form a fourth signal;

a seventh summer which combines the first filtered signal with the third signal to form the first output signal; and

an eighth summer which combines an inverse of the first filtered signal with the fourth signal to form the second output signal.

49. (New) The system of claim 48 further comprising:
first and second speakers for outputting said first and second output signals.

50. (New) The system of claim 48, further comprising:
a multiplier which modifies the center combined signal.

51. (New) A method for processing a stereo input signal which includes center information, matrix encoded surround information, and stereo information, the method comprising:

operating a first circuit for providing a center output having center monaural information, which includes a first summer which combines one channel of the stereo input signal with the other channel of the stereo input signal to form a center combined signal which has the surround information removed;

operating a second circuit for providing a surround output from the matrix encoded surround information having surround monaural information, which includes a second summer which combines one channel of the stereo input signal with an inverse of the other channel of the stereo input signal to form a surround combined signal which has the center information removed;

operating a third circuit for providing an expanded stereo output, which includes a filter which adjusts an amplitude and phase of the surround combined signal on a frequency dependent basis to form a first filtered signal;

combining the center combined signal with one channel of the stereo input signal to form a first signal;

combining the center combined signal with the other channel of the stereo input signal to form a second signal;

combining an inverse of the surround combined signal with the first signal to form the third signal;

combining the surround combined signal with the second signal to form a fourth signal;

combining the first filtered signal with the third signal to form the first output signal;
and

combining an inverse of the first filtered signal with the fourth signal to form the second output signal.

52. (New) The method of claim 51 further comprising:
outputting said first and second output signals using first and second speakers.

53. (New) The method of claim 51, further comprising:
modifying the center combined signal using a multiplier.